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11/02/2004 11:36 AM

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<delpepper@aol.com>, Bill Euille <alexvamayor@aol.com>,
Rich Baier <rich.baier@alexandriava.gov>, Bill Skrabak
cc <william.skrabak@alexandriava.gov>, Lalit Sharma
<lalit.Sharma@ci.alexandria.va.us>, Ignacio Pesoa
bcc

Subject

History:  This message has been forwarded.

Dear Mayor Euille and City Council:

NOTICE hired Sullivan Environmental Consulting Inc. to review the ENSR modeling protocol for the Mirant Potomac River Generating Station. That review is attached below. In his cover letter to me of October 29, 2004, summarizing that review David Sullivan writes:

"We have completed our review of the ENSR modeling protocol for the Mirant facility. The proposed protocol is non-responsive to the primary concern involving plume impaction on high-rise buildings in close proximity to the facility. The proposed procedures, such as the treatment of land use, are in conflict with standard EPA modeling practice. In the interest of efficiency, this modeling should not proceed until the stated deficiencies are fully resolved."

NOTICE asks that the City use its influence to see that the ENSR modeling protocol is revised to rectify the deficiencies identified in detail by Sullivan's report attached below. This must be done to assure that the actual modeling study accurately portrays the effect of downwash on the ambient air quality of the neighborhoods around the plant.

Respectfully yours,
Roger Waud
Member, Mirant Community Monitoring Group
President, NOTICE
(North Old Town Independent Citizens Association)

Begin forwarded message:

> From: "Mark Holdsworth" <mholdsworth@ix.netcom.com>
> Date: Fri Oct 29, 2004 12:25:49 PM US/Eastern
> To: <waudr@comcast.net>
> Subject: ENSR Modeling Prtocol Review Document

>
> Roger,

>
> Attached are David's comments and review of the ENSR modeling
> protocol for
> the Mirant power plant.

> Mark



REVIEW.DOC

Sullivan Environmental Consulting, Inc.

1900 Elkin Street; Suite 240

Alexandria, VA 22308

(703) 780-4580

Fax: (703) 780-4586

October 29, 2004

Mr. Roger Waud
501 Slaters Lane #1203
Alexandria, VA 22314

Subject: ENSR Modeling Protocol Review

Dear Roger Waud,

We have completed our review of the ENSR modeling protocol for the Mirant facility. The proposed protocol is non-responsive to the primary concern involving plume impaction on high-rise buildings in close proximity to the facility. The proposed procedures, such as the treatment of land use, are in conflict with standard EPA modeling practice. In the interest of efficiency, this modeling should not proceed until the stated deficiencies are fully resolved.

Please call me at (703) 780-4580 if you have any questions.

Sincerely,

David A. Sullivan
Certified Consulting Meteorologist

Sullivan Environmental has reviewed the recently proposed modeling protocol submitted by ENSR Corporation for the Mirant Potomac River power plant in Alexandria, Virginia (ENSR, 2004). This review document summarizes our comments and findings of the issues that need further attention.

Issue #1: In Section 1.1 Project Overview, page 1-1, the following statements are made: "The protocol must describe Mirant's proposed refined modeling analysis to assess the effect of aerodynamic downwash from the facility on ambient concentrations of sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO) and particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀). ... "In addition, Mirant must perform a refined modeling analysis to assess the effect of downwash from the facility on ambient concentrations of mercury for comparison to the applicable Standards of Performance for Toxic Pollutants ..."

Why is mercury the only toxic pollutant being addressed? What about all the other inventoried toxics emitted as the result of coal burning (e.g., diluted hydrochloric acid (HCl), hydrogen fluoride (HF), sulfuric acid (H₂ SO₄), arsenic, beryllium, chromium, lead, and others)?

Issue #2: In Section 1.2 Protocol Outline, the following statement is made: "AERMOD is technically superior to the downwash algorithm in EPA's current Guideline model ISCST3"

This statement is confirmed by a recent EPA model comparison document (EPA, 2003a) in that AERMOD uses an equivalent to the more refined building downwash algorithm employed by ISC-PRIME. Building downwash is an important modeling issue in this particular case, but another more important issue is plume impaction on nearby high-rise buildings (see comments in Issue # 4).

Issue #3: In Section 2.0 PROJECT DESCRIPTION, page 2-1, the following statements are made: "Maximum short term mercury emissions from each unit [5 stacks] will be calculated by multiplying this emission factor by the maximum capacity in MMBtu/hr of each unit." ... "Annualized lb/hr mercury emissions will be apportioned equally to each unit."

Why not apportion the total annualized mercury emissions based on the consideration of the maximum capacity of each unit as proposed for the short-term emissions?

Issue #4: In Section 3.5 Meteorological Data, page 3-4, the following statements are made: "Fenceline receptors will be established at 50 m spacing along the property boundary, surrounded by polar receptors placed along 10 degree radials out to 1 km. Polar receptors will be spaced 100 meters apart." ... "AERMOD requires each receptor to identify a "height scale" which is defined as the height of a nearby controlling hill."

While terrain height is necessary, the more important modeling issue not being addressed in the model protocol is the fact there are high-rise residential buildings as close as approximately 100m of the power plant that need to be addressed as priorities in the model receptor grid. Figures 1 through 3 provide the relative locations of three example high-rise residential buildings to the Mirant power plant that need to be addressed in this modeling analysis, with flagpole receptors placed along each floor level of the buildings. Special discrete receptors representing the locations along with corresponding flagpole heights (above ground level) representing the height of these (and possibly other) high-rise buildings located within 1 kilometer of the Mirant power plant need to be incorporated into the model receptor grid. This flagpole height representation of the Marina Towers high-rise building was a key issue in the Sullivan screening model report mentioned in Appendix A of the model protocol (ENSR, 2004). As was stated in that screening model report: "The objective of this analysis was to evaluate the likelihood for plume impaction onto the upper floors of the Marina Towers complex." This key modeling issue is omitted in the ENSR model protocol.

Issue #5: In Section 3.5.1 Site Characteristics, page 3-8, the following statements are made: "It will be assumed that the site characteristics of the area surrounding the power plant and Reagan National Airport are similar." ... "Therefore, a 3-kilometer radial area surrounding the meteorological tower was divided into 4 directional sectors for specifying site characteristics."

What is the basis for the assumption that the site characteristics for the areas surrounding the power plant and Reagan National Airport are similar? The AERMET User's Guide (EPA, 1998) states the following on page 2-51: "The processing carried out in Stage 3 is location-dependent. The application site is likely to be different from either of the meteorological sites ..."

In some cases modeling can be done in a reasonably representative fashion using land use data from the source of the meteorological data as the basis. In this instance, however, the focus is on specific fetches of interest, e.g., towards the marina Towers high-rise apartment building located just north of the Mirant power plant. For this location, flow from the south is most critical and clearly is over land.

A review of Figure 2-1 on page 2-2 of the model protocol (ENSR, 2004) shows potentially different land use characteristics in the southeast to southwest quadrants around the power plant compared to National Airport. For example, in the land use characteristics table on page 3-8 of the model protocol (ENSR, 2004), which is based on centering on National Airport, the land use in Sector 2 (150°-200°, or the southerly quadrant) is defined as 75% "water". However, if the power plant is used as the center point as is required by the EPA Guideline on Air Quality Models (EPA, 2003b), the land use for this sector would most likely have a majority land use classification of "urban". This land use classification change from water to urban for this sector could result in a significant difference in the predicted downwind concentration field. The Auer method (Auer, 1978) of land use classification should be incorporated into the land use method to more definitively define the urban / suburban classification of the areas to the south and west of the power plant.

Figure 1. Marina Towers High Rise Building

14-Story tall building located about 1 block north of Mirant power plant
at 501 Slaters Lane

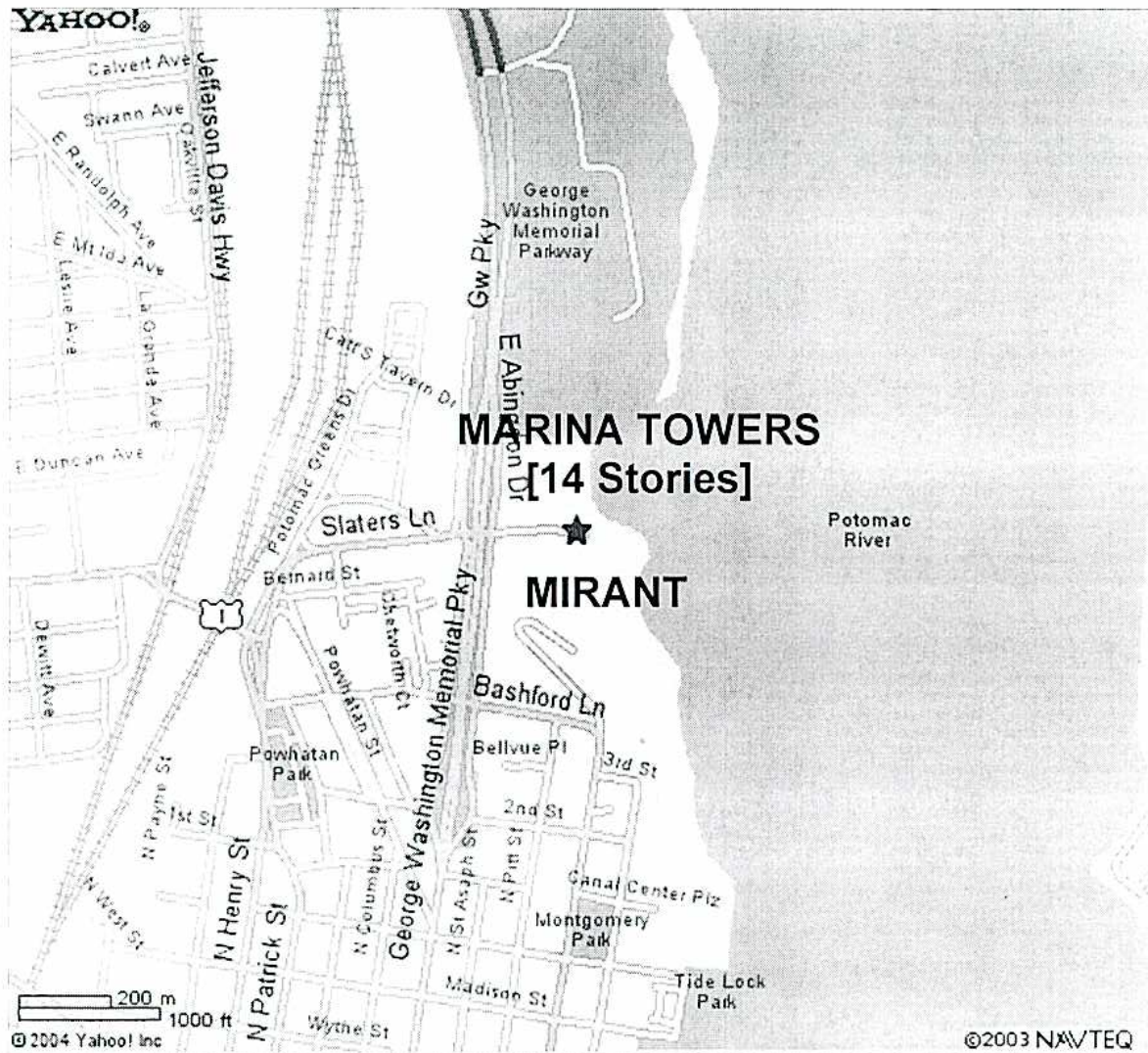


Figure 2. Port Royal High Rise Building

17-Story tall building located about 6 blocks south of Mirant power plant
at 801 N. Pitt Street

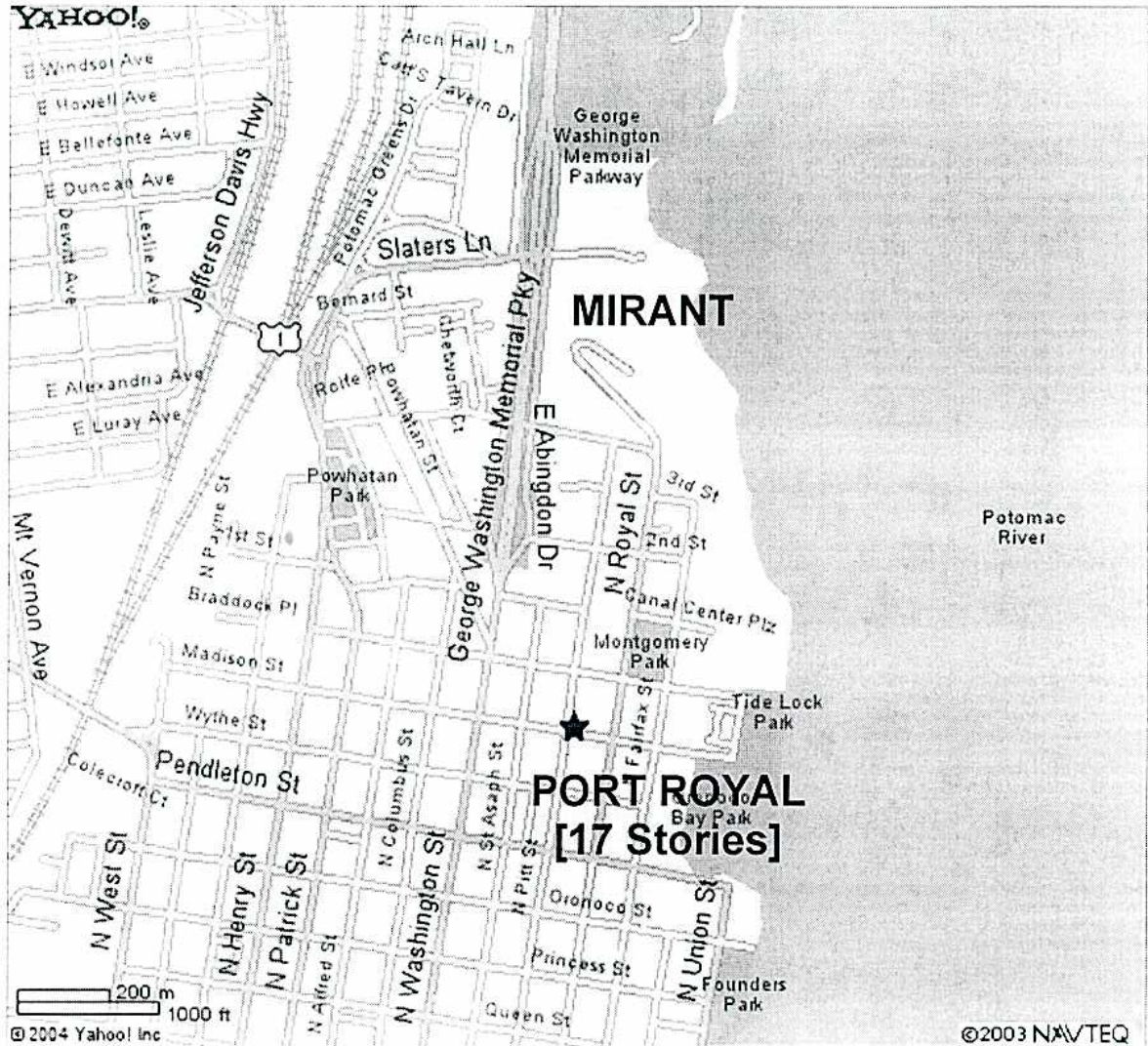
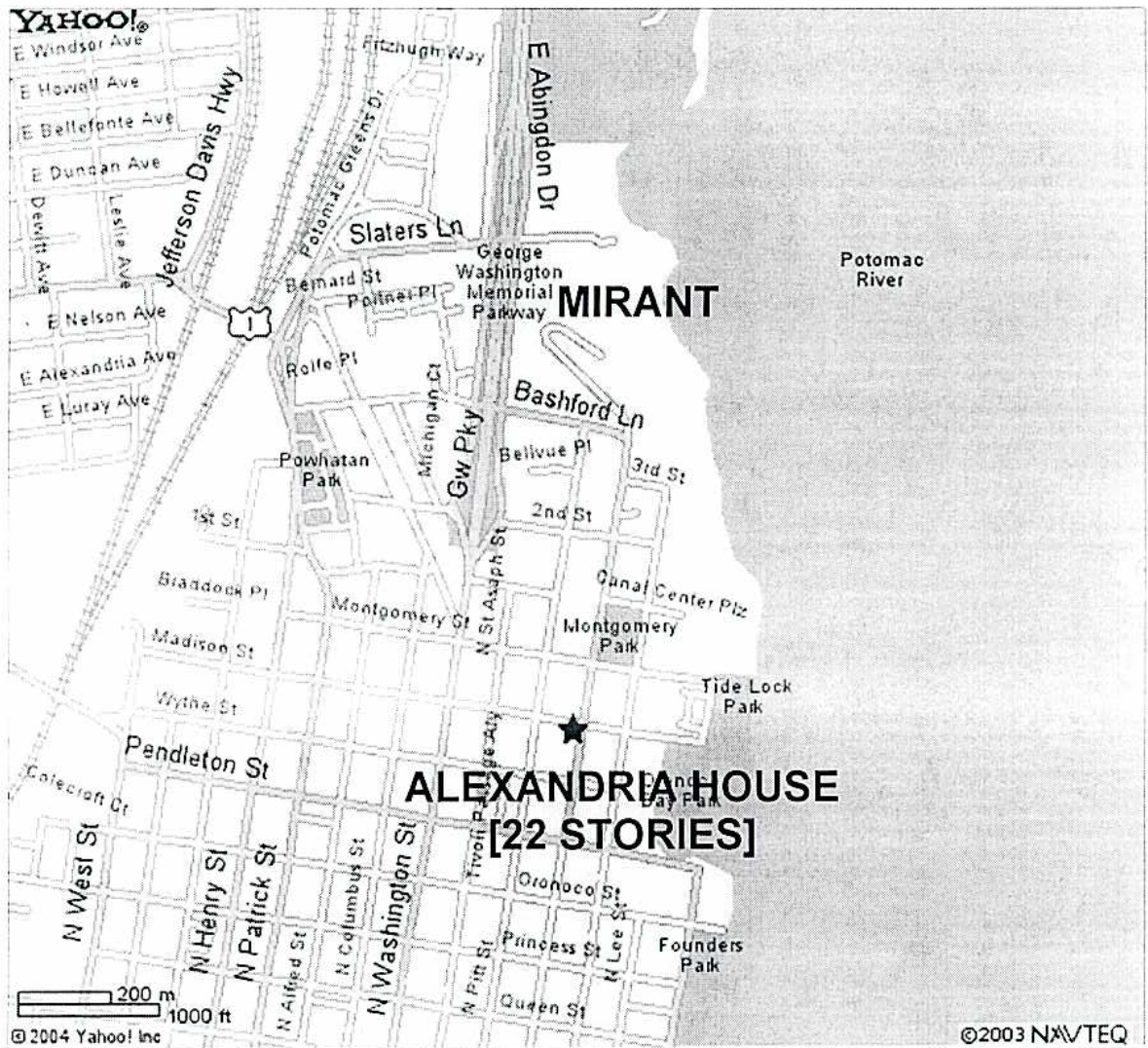


Figure 3. Alexandria House High Rise Building

22-Story tall building located about 6 blocks south of Mirant power plant
at 400 Madison Street



References

Auer, August, H., 1978: Correlation of Land-use and Cover with Meteorological Anomalies. *Journal of Applied Meteorology*, American Meteorological Society, Vol. 17, pp. 636-643.

ENSR, 2004: Protocol for Modeling the Effects of Downwash from Mirant's Potomac River Power Plant. ENSR Corporation, Document Number 10350-002-400, October, 2004.

EPA, 2003a: Comparison of Regulatory Design Concentrations – AERMOD vs ISCST3, CTDMPPLUS, ISC-PRIME. EPA-454/R-03-002, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division, Research Triangle Park, North Carolina, 89 pages.

EPA, 2003b: Guideline on Air Quality Models (Revised). U.S. Environmental Protection Agency, 40 CFR 51 Appendix W, Office of Air Quality Planning and Standards, Research Triangle Park, NC.

EPA, 1998: Revised Draft User's Guide For the AERMOD Meteorological Preprocessor (AERMET). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 273 pages.